DATA SHEET

CISCO 7301 SERIES ROUTER

The Cisco® 7301 Series Router is a compact, high-performance single-rack-unit (1RU) router coupled with a broad set of interfaces and Cisco IOS® Software features, which makes it ideal for both service providers and enterprise applications.

As part of the industry-leading Cisco 7000 Series routers, the Cisco 7301 packs high performance in a space- and power-efficient chassis that includes a single Cisco 7000 Series port adapter slot, three onboard Gigabit Ethernet (copper or optical) or Fast Ethernet ports, and new high-speed bus technologies. The key features of the Cisco 7301 Router are:

- Three times the performance increase over existing 1RU routers
- Compact, power-efficient 1RU form factor
- Single Cisco 7000 Series port adapter slot
- Complete Cisco IOS Software feature support
- Three onboard Gigabit Ethernet (copper or optical) or Fast Ethernet ports
- Pluggable Gigabit Ethernet optics (Small Form-Factor Pluggable [SFP] optics)
- Up to 1 GB of available DRAM, supporting up to 1 million routes
- Up to 256 MB of removable compact Flash memory
- Front-to-back airflow and single-sided management

The Cisco 7301 delivers a full suite of Cisco IOS Software services for managing network security, allocating quality of service (QoS) among applications and users, and providing value-added services such as NetFlow accounting and encryption. QoS applications such as Committed Access Rate (CAR), Weighted Random Early Detection (WRED), and Weighted Fair Queuing (WFQ) can be flexibly applied to provide precedence across IP addresses, applications, or specific users with a high level of granularity.

With its combination of scalable performance, compact architecture, high density, and low price per port, the Cisco 7301 is ideally suited for a variety of key applications within both the service provider and enterprise markets.

SERVICE PROVIDER APPLICATIONS

The Cisco 7301 is targeted towards five principal application areas within a service provider network:

- Broadband aggregation: PTA/LAC or LNS/TS aggregation router capable of handling up to 16,000 simultaneous sessions and allowing for a pay-as-you-grow “rack and stack” architecture.
- IPv6 gateway: Linking between an IPv4 network and an IPv6 network, including IPv6 VPN architectures.
- Managed services: High-end customer premises equipment (CPE) or Multiprotocol Label Switching-customer edge (MPLS-CE) devices due to its high-performance, feature-rich support with both Gigabit Ethernet LAN connectivity and WAN port adapter connectivity.
- High-availability design: 100 percent redundancy via 2 CPEs configured for Hot Standby Router Protocol (HSRP) or Layer 3 load balancing.
- Cost-effective route reflector: Ideally suited as a low cost route reflector with its ability to hold one million routes with its maximum of 1 GB memory installed.

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ENTERPRISE APPLICATIONS

- Secure Internet gateway: Support for features such as IP Security (IPSec) Protocol and stateful firewall at very high speeds make it an ideal Internet gateway (security) appliance.
- Large-branch-office router: High-performance branch-office router with support for up to OC-3/STM-1 or Gigabit Ethernet connectivity.
- Network-appliance router: Support for CiscoWorks QoS Policy Manager and other management tools make it an ideal QoS appliance at the edge of enterprise networks.

By enabling the multifunction capabilities of the Cisco 7301, customers can simplify their network architectures, significantly reduce initial equipment costs, and increase revenue opportunities through value-added services.

FEATURES AND BENEFITS

Table 1 describes the features and benefits of the Cisco 7301 Router.

Table 1. Features and Benefits of Cisco 7301 Router

Features	Benefits
Performance	• Provides nearly 1 million-packets-per-second (Mpps) processing performance; the fastest Cisco 1RU general-purpose processor, as of January 2003.
Compact form factor and low power consumption (75 watts)	• Uniquely positioned as one of the fastest 1RU routers in the industry today. Customers can maximize router performance where space is constrained. • “rack & stack” allows customers to maximize the use of space in expensive Internet service provider (ISP) data centers. • Ideal for a dedicated security or QoS appliance at the edge of enterprise networks.
Supports Cisco IOS Software	• Supports a wide breadth of IP network services including QoS, MPLS, Layer 2 VPN, and IPv6 and all other Cisco IOS features depending on the release used, thereby enabling multiple revenue-generating or productivity-increasing applications.
3 fixed 10/100/1000-Mbps ports (RJ-45 or SFP optics) directly on the processor	• Maximizes LAN connectivity and performance without taking up slot capacity. • High-speed LAN interfaces no longer have to share a PCI bus with port adapters.
256 MB (default), upgradable to 512 MB, and 1 GB of DRAM	More memory offers the following benefits: • Supports routing tables up to 1 million entries. • Supports increased routes and additional MPLS VRFs. • Enables higher scalability on features such as NetFlow, Network Address Translation (NAT), access control lists (ACLs), and more. • Makes the Cisco 7301 an ideal route reflector in a service provider network.
Single 7000 family port adapter slot	• Maximizes investment protection and flexibility by allowing customers to use existing port adapters. This also simplifies sparing.

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CISCO 7301 SERIES PRODUCT SPECIFICATIONS: HARDWARE COMPONENTS

Chassis

The Cisco 7301 router is designed with a view to enhance operational efficiency. The 7301 incorporates a 700-MHz integrated processor and includes three 10/100/1000-Mbps interfaces with both RJ-45, three SFP optical interfaces, a single Cisco 7000 Series router port adapter slot, a 64-MB compact Flash card, and auxiliary and console ports in a compact (1 RU) chassis.

The Cisco 7301 processor integrates functions such as the memory controller, system controller, NVRAM, console/auxiliary ports, and Flash storage device controller, all on the same chip as the system CPU. That means that these devices that were once spread across multiple chips are now integrated into a single network processor, enabling the system to run at much faster speeds.

Table 2 provides a quick overview of the available options.

Table 2. Options for Cisco 7301 Router

Feature	Cisco 7301	Cisco 7301 Router Supporting Broadband Aggregation (Part Numbers Cisco7301-BB and Cisco7301-BB-8K)
Processor	• 700 MHz integrated processor	• 700-MHz integrated processor
Performance	• 900,000 pps or more	• 900,000 pps or more
LAN ports	• (3) FE (10/100/1000) or Gigabit Ethernet	• (3) FE (10/100/1000) or Gigabit Ethernet
Gigabit Ethernet optics	• SFPs (SX, LX/LH, ZX)	• SFPs (SX, LX/LH, ZX*)
DRAM	• 256 MB default (1 GB maximum)	• 512 MB default (1 GB maximum)
Compact Flash	• 64 MB default (256 MB maximum)	• 64 MB default (256 MB maximum)
Cisco IOS Software Release	• 12.2(11)YZ; 12.2(13)B; 12.3.(2)T**	• 12.2(11)YZ; 12.2(13)B; 12.3.(2)T** Broadband license for 16K or 8K sessions

** When this Cisco IOS release is available

The Cisco 7301 chassis retains all the important features of the Cisco 7401, which enables it to deliver an exceptional price/performance ratio for enterprises and service providers alike.

Like the Cisco 7401, in order to ensure high system availability required for mission-critical applications, the Cisco 7301 also supports:

- Physical alarm relay in case of device failure
- Dual AC and dual DC power supplies
- Online insertion and removal (OIR) of port adapters
- Environmental monitors with levels of escalation to ensure corrective action prior to system shutdown

Built-In LAN Ports

The Cisco 7301 processor includes three fixed 10/100/1000-Mbps LAN interfaces as part of the system CPU. These interfaces run at any speed from 10 Mbps Ethernet to 1000 Mbps Gigabit Ethernet. There is one RJ-45 connection and one SFP Gigabit Ethernet connection for each interface, for a total of three Ethernet RJ-45 and three Small Form-Factor Pluggable Gigabit Ethernet connections on the Cisco 7301 faceplate, any of which may be active at any time. The RJ-45 interfaces have the option of running at 10-Mb Ethernet, 100-Mb Fast Ethernet, or 1000-Mb Gigabit Ethernet over copper. Industry-standard SX, LX/LH, or ZX SFP Gigabit Ethernet transceivers provide Gigabit Ethernet connectivity over fiber.

Figure 1 illustrates these ports.

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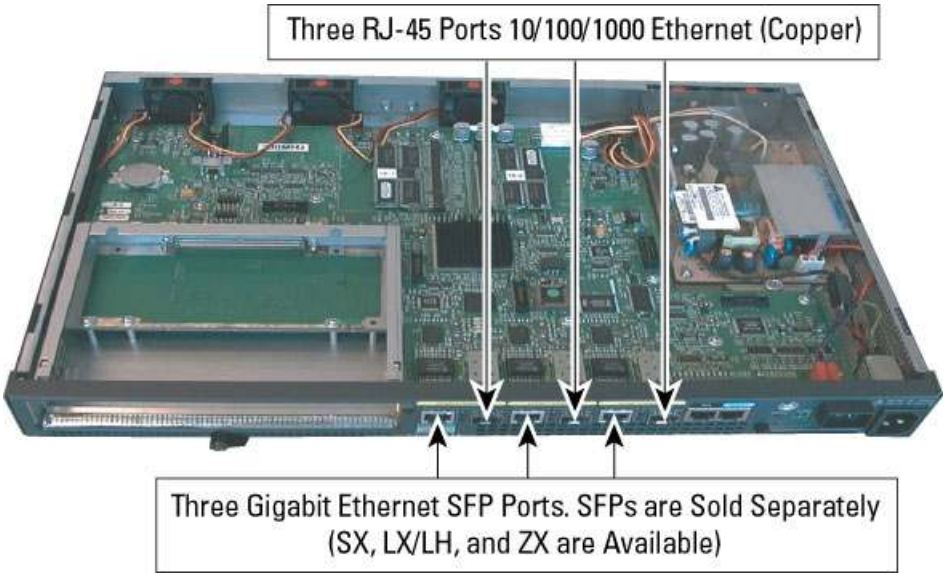
Figure 1
Cisco 7301 Series Router LAN Ports


Three RJ-45 Ports 10/100/1000 Ethernet (Copper)
Three Gigabit Ethernet SFP Ports. SFPs are Sold Separately
(SX, LX/LH, and ZX are Available)

Connectivity

The Cisco 7301 includes a single Cisco 7000 Series port adapter slot, which protects existing customer investment in interfaces and simplifies sparing.

The Cisco 7301 offers scalable density with a wide range of interfaces including:

- Ethernet, Fast Ethernet, and Gigabit Ethernet
- Serial and multichannel T1/E1and T3/E3 interfaces and packet-over-SONET (POS) OC-3
- OC-3/STM-1 POS, T3/E3 and OC-3/STM-1 ATM, and T1/E1 Inverse Multiplexing over ATM (IMA)
- ISDN Primary Rate Interface (PRI), Basic Rate Interface (BRI), and High-Speed Serial Interface (HSSI)
- Support for hardware encryption and Layer 3 compression (VPN accelerator modules)

For a detailed listing of all port adapters supported on the Cisco 7301 Series Router, please contact your Cisco Sales Representative.

The Cisco 7301 architecture is based on a new memory architecture type called the double data rate (DDR) memory. This new form of memory roughly doubles the speed of access to system memory. In a store-and-forward router such as the Cisco 7301, this provides a clear advantage because each packet must be individually stored in memory, rewritten by the system CPU, and then transmitted out of memory to the outbound interface.

The Cisco 7301 supports 256 MB (default), upgradable to 512 MB, or 1 GB of DRAM memory. There are two DRAM memory slots, so 256 MB of memory consists of two 128-MB memory SoDIMMs, 512 MB consists of two 256-MB memory SoDIMMs, and 1 GB consists of two 512-MB memory SoDIMMs.

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NVRAM and Boot Flash

The NVRAM in the Cisco 7301 is 512 KB.

Boot Flash on the Cisco 7301 has been doubled over previous Cisco 7000 Series routers to 32 MB. This increase in size allows the end user to keep a full boot image in boot Flash or have plenty of room for multiple log file locations or backup configuration files.

Compact Flash Memory

The Cisco 7301 also includes a single 64-MB default compact Flash for removable Flash storage, upgradable to 256 MB. The chassis are also formatted using the ATA standard file system format so they can be read in other ATA routers and PC systems with a simple compact Flash to PCMCIA adapter module or compact Flash reader. It is large enough to hold at least two Cisco IOS Software images.

Console and Auxiliary Ports

The Cisco 7301 has built-in console and auxiliary ports on the front end of the chassis.

Software

The Cisco 7301 supports the following Cisco IOS releases:

- 12.2(11)YZ. This is a special release of 12.2(11)S. Its migration path is the third release of 12.2S.
- 12.2(13)B required to support 16,000 subscribers.
- 12.3(2)T when the release is available.

PRODUCT SPECIFICATIONS

Table 3 describes the power requirements and Table 4 describes the physical and environmental specifications of the Cisco 7301. Table 5 describes how the Cisco 7301 complies with regulatory and standards requirements.

Table 3. Power Requirements of Cisco 7301

Description	Cisco 7301 Series Router
Single and Dual AC Power Supply	
AC-input power	• 75W maximum (single supply configuration)
AC-input voltage rating	• 100 to 240 VAC wide input with power factor correction
AC-input current rating	• Rated for 2A • Not to exceed 1.0A max. at 100 VAC and 0.5A max. at 240 VAC
AC-input frequency rating	• 50/60 Hz
AC-input cable	• 18 AWG 3-wire cable, with 3-lead IEC-320 receptacle on the power supply end and a country-dependent plug on the power source end
48V Single and Dual DC Power Supply	
DC-input voltage ratings	• –48 VDC nominal in North America, –60 VDC nominal in the European Community; Maximum range is -–40.5 to –72 VDC
DC-input current ratings	• Rated for 3A • Not to exceed 1.6A maximum at –48 VDC (50VA/˜–54 VDC = 1.0A typical draw)
DC-input cable	• 18 AWG recommended minimum, with at least 2 conductors for 48V single and 4 conductors for 48V dual power supplies respectively, rated for at least 140℉ (60℃)

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Table 4. Physical and Environmental Specifications

Description	Cisco 7301 Series Router
Dimensions (H x W x D)	• 1.73 in. x 17.3 in. x 13.87 in. (4.39 cm x 43.9 cm x 35.23 cm)
Weight	• Chassis fully configured with a port adapter 10.5 lb approximately (4.76 kg)
Heat dissipation	• 50W (170 BTU typical, 75W (255 BTU) maximum
Power dissipation	• 75W maximum configuration
Temperature	• 32 to 104℉ (0 to 40℃), operating; –4 to 149℉ (–2 0 to 65℃), nonoperating
Humidity	• 10 to 90% humidity noncondensing

REGULATORY COMPLIANCE

- CE marking

Safety

- UL 60950
- CAN/CSA-C22.2 No. 60950
- EN 60950
- IEC 60950
- AS/NZS 3260
- IEC 60825-1
- IEC 60825-2
- EN 60825-1
- EN 60825-2
- 21CFR 1040

EMC

- FCC Part 15 (CFR 47) Class A
- ICES-003 Class A
- EN55022 Class A
- CISPR22 Class A
- AS/NZS 3548 Class A
- VCCI Class A
- EN55024
- ETS300 386
- EN50082-1
- EN61000-3-2
- EN61000-3-3
- EN61000-6-1
- ETS 300386

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Industry Standard

- GR-64-Core NEBS Level 3 (pending)
- GR-1089-Core NEBS Level 3 (pending)
- ETSI 300 019 Storage Class 1.1 (pending)
- ETSI 300 019 Transportation Class 2.3 (pending)
- ETSI 300 019 Stationary Use Class 3.1 (pending)

SOFTWARE REQUIREMENTS

The minimum software requirement for the Cisco 7301 Router is Cisco IOS Software Release 12.2 (11)YZ or later.

The minimum software requirement for the Cisco 7301-BB router is Cisco IOS Software Release 12.2 (13)B or later; this requirement is for 16,000 subscribers.

The Cisco 7301 Router will also be supported in Cisco IOS Software Release 12.3(2).T when the release is available.

PRODUCT ORDERING DETAILS

Tables 5 to 10 provide the information needed to order the Cisco 7301 and related products. Please visit: http://www.cisco.com/public/ordering_info.shtml to place an order.

Table 5. Chassis Ordering Information

Product Part Number	Product Description
Cisco7301	Cisco 7301 single-slot chassis. Includes 256 MB default DRAM, 64 MB default Flash memory, AC power, and IP software.
Cisco7301=	Cisco 7301 single-slot chassis SPARE. Includes 256 MB default DRAM, 64 MB default Flash memory, AC power, and IP software.
Cisco7301-BB-8K	Cisco 7301 single-slot chassis. Includes 256 MB default DRAM, 64 MB default Flash memory, AC power, and broadband aggregation feature license to support 8000 sessions.
Cisco7301-BB	Cisco 7301 single-slot chassis. Includes 512 MB default DRAM, 64 MB default Flash memory, AC power, and broadband aggregation feature license to support 16,000 sessions.

Table 6. SDRAM Memory Ordering Information

Product Number	Product Description
MEM-7301-256MB	2 128 MB memory modules (256 MB total) for the Cisco 7301 Router
MEM-7301-256MB=	2 128 MB memory modules (256 MB total) for the Cisco 7301 Router, SPARE
MEM-7301-512MB	2 256 MB memory modules (512 MB total) for the Cisco 7301 Router
MEM-7301-512MB=	2 256 MB memory modules (512 MB total) for the Cisco 7301 Router, SPARE
MEM-7301-1GB	2 512 MB memory modules (1 GB total) for the Cisco 7301 Router
MEM-7301-1GB=	2 512 MB memory modules (1 GB total) for the Cisco 7301 Router, SPARE

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Table 7. Compact Flash Memory Ordering Information

Product Number	Product Description
MEM-7301-FLD64	64 MB compact Flash disk for the Cisco 7301
MEM-7301-FLD64 =	64 MB compact Flash disk for the Cisco 7301 Router, SPARE
MEM-7301-FLD128	128 MB compact Flash disk for the Cisco 7301 Router
MEM-7301-FLD128=	128 MB compact Flash disk for the Cisco 7301 Router, SPARE
MEM-7301-FLD256	256 MB compact Flash disk for the Cisco 7301 Router
MEM-7301-FLD256=	256 MB compact Flash disk for the Cisco 7301 Router, SPARE

Table 8. SFP Optics Ordering Information

Product Number	Product Description
GLC-SX-MM	Gigabit Ethernet SFP, LC connector SX transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC connector SX transceiver, SPARE
GLC-LH-SM	Gigabit Ethernet SFP, LC connector LH transceiver
GLC-LH-SM=	Gigabit Ethernet SFP, LC connector LH transceiver, SPARE

Table 9. Power Supply Ordering Information

Product Number	Product Description
PWR-7301-AC	AC power supply option for Cisco 7301
PWR-7301/2-AC	Dual AC power supply option for Cisco 7301
PWR-7301-DC48	DC 48 power supply option for Cisco 7301
PWR-7301/2-DC48	Dual DC 48 power supply option for Cisco 7301

Table 10. Feature License Ordering Information

Product Number	Product Description
FR-BUS-16-73	Cisco 7301 Broadband Aggregation 16,000-User Services License
FR-BUS-16-73=	Cisco 7301 Broadband Aggregation 16,000-User Services License - SPARE
FR-BUS72	Broadband 8000-User Services License
FR-BUS72=	Broadband 8000-User Services License - SPARE

CUSTOMER SERVICE AND SUPPORT

Cisco Systems® offers a wide range of service and support options for its customers. More information about Cisco service and support programs and benefits can be found at: http://www.cisco.com/public/Support_root.shtml.

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